UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>09 February 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-26</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,3-8 and 10-26</u> is/are rejected.

7)☒ Claim(s) <u>2 and 9</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>24 July 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some * c)☐ None of:

       1.☒ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

Remarks

Claims 1-26 are pending.

Response to Arguments

1.   Applicant's arguments filed 2/9/2007 have been fully considered but they are not persuasive. Applicant argues that Tewfik is silent as to the use of the length of the message in order to determine the pseudo-random function, and, therefore, cannot teach a dependence on the number of times a symbol has been inserted or on a ranking of the symbol among the ordered symbols. However, claim 1 defines the dependence upon the length of the message to be a dependence on a number of times the symbol has been inserted into other regions or by a dependence on a ranking of the symbol among the ordered symbols. Based upon this definition, the dependence on a length of the message is provided by either a dependence on a number of times the symbol has been inserted (criteria one) or by a dependence on a ranking of the symbol among the ordered symbols (criteria two). As seen by claims 1 and 8, a teaching of either criteria one or criteria two is a teaching of dependence upon a length of the message, not the other way around. Additionally, Moskowitz explicitly recites that the key is dependent upon the length of the watermark message in Column 7, lines 51-62, for example.

Claim Objections

2.   Claims 4 and 11 are objected to because of the following informalities: The

claims do not make clear which extracting step the final limitation is referring to in that

"said extracting step" could refer to either "extracting a length" or "extracting the inserted

message". For purposes of prior art rejection, said extracting step has been construed

as referring to "extracting the inserted message".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by
> another filed in the United States before the invention by the applicant for patent or (2) a patent
> granted on an application for patent by another filed in the United States before the invention by the
> applicant for patent, except that an international application filed under the treaty defined in section
> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States
> only if the international application designated the United States and was published under Article 21(2)
> of such treaty in the English language.

3.   Claims 1, 3, 8, 10, 15, and 17-22 are rejected under 35 U.S.C. 102(e) as being

anticipated by Tewfik (U.S. Patent 6,442,283).

Regarding Claim 1,

Tewfik discloses a method of inserting a message into digital data

representative of physical quantities, the message including ordered

symbols, the method comprising the steps of:

Segmenting the data into regions (Column 4, line 42 to Column 5,

line 9); and

Associating at least one region with each symbol to be inserted,

wherein, for each region into which a symbol in question is to be inserted

(Column 3, lines 1-37; and Column 11, lines 50-67), the method including

the steps of:

Determining a pseudo-random function, from a key which depends

on an initial key and on a length of the message, the dependence on the

length of the message being provided either by a dependence on a

number of times the symbol has been inserted into other regions or by a

dependence on a ranking of the symbol among the ordered symbols

(Column 5, lines 16-65; and Column 6, line 8 to Column 8, line 46);

Modulating the symbol in question by the previously determined

pseudo-random function in order to supply a pseudo-random sequence

(Column 3, lines 1-37; Column 5, lines 16-65; and Column 11, lines 1-11);

and

Adding the pseudo-random sequence to the region in question

(Column 3, lines 1-37; Column 5, lines 16-65; and Column 11, lines 1-11).

Regarding Claim 8,

Claim 8 is a device claim that corresponds to method claim 1 and is

rejected for the same reasons.

Regarding Claim 17,

Claim 17 is an apparatus claim that corresponds to method claim 1

and is rejected for the same reasons.

Regarding Claim 18,

Claim 18 is an apparatus claim that corresponds to method claim 1 and is rejected for the same reasons.

Regarding Claim 19,

Claim 19 is a storage medium containing a computer-readable program claim that corresponds to method claim 1 and is rejected for the same reasons.

Regarding Claim 22,

Claim 22 is a storage medium containing a computer-readable program claim that corresponds to method claim 1 and is rejected for the same reasons.

Regarding Claim 3,

Tewfik discloses transforming the digital data by a reversible transformation (Column 4, line 42 to Column 5, line 14).

Regarding Claim 10,

Claim 10 is a device claim that corresponds to method claim 3 and is rejected for the same reasons.

Regarding Claim 15,

Tewfik discloses that the steps of segmenting and associating and the steps of determining, modulating, and adding are performed by a microprocessor, a read-only memory including a program for processing the data, and a random-access memory including registers suitable for

recording variables modified during running of the program (Column 2,

lines 50-61; and Column 12, lines 28-52).

Regarding Claim 20,

Tewfik discloses that the storage medium is detachably mountable

on a device for inserting a message that includes ordered symbols into

digital data representative of physical quantities (Column 2, lines 50-61);

and that the device performing the steps of claim 1 (see rejection of claim

1).

Regarding Claim 21,

Tewfik discloses that the storage medium is a floppy disk or a CD-

ROM (Column 2, lines 50-61).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1, 3, 8, 10, 15, and 17-22 rejected under 35 U.S.C. 103(a) as being

unpatentable over Tewfik in view of Moskowitz (U.S. Patent 5,889,868).

Regarding Claim 1,

Tewfik discloses a method of inserting a message into digital data representative of physical quantities, the message including ordered symbols, the method comprising the steps of:

Segmenting the data into regions (Column 4, line 42 to Column 5, line 9); and

Associating at least one region with each symbol to be inserted, wherein, for each region into which a symbol in question is to be inserted (Column 3, lines 1-37; and Column 11, lines 50-67), the method including the steps of:

Determining a pseudo-random function, from a key which depends on an initial key and on a length of the message, the dependence on the length of the message being provided either by a dependence on a number of times the symbol has been inserted into other regions or by a dependence on a ranking of the symbol among the ordered symbols (Column 5, lines 16-65; and Column 6, line 8 to Column 8, line 46);

Modulating the symbol in question by the previously determined pseudo-random function in order to supply a pseudo-random sequence (Column 3, lines 1-37; Column 5, lines 16-65; and Column 11, lines 1-11); and

Adding the pseudo-random sequence to the region in question (Column 3, lines 1-37; Column 5, lines 16-65; and Column 11, lines 1-11);

But does not explicitly disclose dynamically changing the encoding algorithm.

Moskowitz, however, discloses dynamically changing the encoding algorithm (Column 18, lines 30-56); and that the key depends on a length of the message (Column 7, lines 29-62). It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to incorporate the algorithm varying techniques of Moskowitz into the data embedding system of Tewfik in order to make it more difficult for a malicious entity to decode the embedded information, since the attacker has to guess the order and timing of the encoding algorithms as well as the key.

Regarding Claim 8,

Claim 8 is a device claim that corresponds to method claim 1 and is rejected for the same reasons.

Regarding Claim 17,

Claim 17 is an apparatus claim that corresponds to method claim 1 and is rejected for the same reasons.

Regarding Claim 18,

Claim 18 is an apparatus claim that corresponds to method claim 1 and is rejected for the same reasons.

Regarding Claim 19,

Claim 19 is a storage medium containing a computer-readable

program claim that corresponds to method claim 1 and is rejected for the

same reasons.

Regarding Claim 22,

Claim 22 is a storage medium containing a computer-readable

program claim that corresponds to method claim 1 and is rejected for the

same reasons.

Regarding Claim 3,

Tewfik as modified by Moskowitz discloses the method of claim 1,

in addition, Tewfik discloses transforming the digital data by a reversible

transformation (Column 4, line 42 to Column 5, line 14).

Regarding Claim 10,

Claim 10 is a device claim that corresponds to method claim 3 and

is rejected for the same reasons.

Regarding Claim 15,

Tewfik as modified by Moskowitz discloses the device of claim 8,

Tewfik discloses that the steps of segmenting and associating and the

steps of determining, modulating, and adding are performed by a

microprocessor, a read-only memory including a program for processing

the data, and a random-access memory including registers suitable for

recording variables modified during running of the program (Column 2,

lines 50-61; and Column 12, lines 28-52).

Regarding Claim 20,

Tewfik as modified by Moskowitz discloses the storage medium

storing a computer-readable program of claim 19, in addition, Tewfik

discloses that the storage medium is detachably mountable on a device

for inserting a message that includes ordered symbols into digital data

representative of physical quantities (Column 2, lines 50-61); and that the

device performing the steps of claim 1 (see rejection of claim 1).

Regarding Claim 21,

Tewfik as modified by Moskowitz discloses the storage medium

storing a computer-readable program of claim 19, in addition, Tewfik

discloses that the storage medium is a floppy disk or a CD-ROM (Column

2, lines 50-61).

5.   Claims 4-7, 11-14, 16-18, and 23-26 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Nakagawa (U.S. Patent 6,104,826) in view of Inoue (U.S.

Patent 6,693,965).

Regarding Claim 4,

Nakagawa discloses a method for extracting a message from digital

data representative of physical quantities, the message including ordered

symbols, the method comprising the steps of:

Extracting a length of an inserted message, from a set of length

values, based on the digital data (Column 13, line 10 to Column 14, line

4); and

Extracting the inserted message (Column 13, line 10 to Column 14,

line 4);

But does not disclose segmenting the data into regions or that the

extracting step includes generating a key which depends on an initial key

and on an assumed length for the inserted message from the set of length

values.

Inoue, however, discloses segmenting the data into regions

(Column 25, lines 22-37); and extracting the inserted message (Column

25, line 38 to Column 26, line 54); wherein the extracting step includes a

step of generating a key which depends on an initial key and on an

assumed length for the inserted message from the set of length values

(Column 25, line 22 to Column 26, line 54). It would have been obvious to

one of ordinary skill in the art at the time of applicant's invention to

incorporate the keyed watermarking scheme of Inoue into the watermark

embedding/extracting system of Nakagawa in order to secure the system

through use of multiple keys, such that an entity that does not have

access to the keys cannot find or extract the watermark data.

Regarding Claim 11,

Claim 11 is a device claim that corresponds to method claim 4 and is rejected for the same reasons.

Regarding Claim 17,

Claim 17 is an apparatus claim that corresponds to method claim 4 and is rejected for the same reasons.

Regarding Claim 18,

Claim 18 is an apparatus claim that corresponds to method claim 4 and is rejected for the same reasons.

Regarding Claim 23,

Claim 23 is a storage medium containing a computer-readable program claim that corresponds to method claim 4 and is rejected for the same reasons.

Regarding Claim 26,

Claim 26 is a storage medium containing a computer-readable program claim that corresponds to method claim 4 and is rejected for the same reasons.

Regarding Claim 5,

Nakagawa as modified by Inoue discloses the method of claim 4, in addition, Nakagawa discloses that the step of extracting the length of the inserted message includes the steps of:

Selecting the set of length values (Column 13, line 10 to Column 14, line 4);

Calculating a correlation value between the message and the digital

data, for each of the length values (Column 13, line 10 to Column 14, line

4); and

Determining a local maximum among the correlation values

(Column 13, line 10 to Column 14, line 4).

Regarding Claim 12,

Claim 12 is a device claim that corresponds to method claim 5 and

is rejected for the same reasons.

Regarding Claim 6,

Nakagawa as modified by Inoue discloses the method of claims 4

or 5, in addition, Nakagawa discloses that the step of extracting the length

of the inserted message is carried out while processing F times fewer

coefficients than included in the digital data (Column 13, line 10 to Column

14, line 4).

Regarding Claim 13,

Claim 13 is a device claim that corresponds to method claim 6 and

is rejected for the same reasons.

Regarding Claim 7,

Nakagawa as modified by Inoue discloses the method of claim 6, in

addition, Nakagawa discloses determining a total number of coefficients to

be considered (Column 13, lines 35-44);

Selecting a maximum number of coefficients corresponding to a same inserted symbol, and, if the total number of coefficients to be considered has not been reached, reiterating the selecting step for another symbol (Column 13, line 45 to Column 14, line 4).

Regarding Claim 14,

Claim 14 is a device claim that corresponds to method claim 7 and is rejected for the same reasons.

Regarding Claim 16,

Nakagawa as modified by Inoue discloses the device of claim 11, in addition, Inoue discloses that the means for segmenting and the means for extracting are incorporated into a microprocessor; a read-only memory including a program for processing the data, and a random-access memory including registers for recording variables modified during running of the program (Column 39, lines 43-50).

Regarding Claim 24,

Nakagawa as modified by Inoue discloses the storage medium of claim 23, in addition, Inoue discloses that the storage medium is detachably mountable on a device (Column 39, lines 43-50).

Regarding Claim 25,

Nakagawa as modified by Inoue discloses the storage medium of claim 23, in addition, Inoue discloses that the storage medium is a floppy disk or a CD-ROM (Column 39, lines 43-50).

Allowable Subject Matter

6.   Claims 2 and 9 are objected to as being dependent upon a rejected base claim,

but would be allowable if rewritten in independent form including all of the limitations of

the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jeffrey D. Popham whose telephone number is (571)-

272-7215. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Emmanuel Moise can be reached on (571)272-3865. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeffrey D Popham
Examiner
Art Unit 2137

EMMANUEL L. MOISE
SUPERVISORY PATENT EXAMINER